The Excavating Engineer

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ADDRESS ALL COMMUNICATIONS TO
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WESTINGHOUSE

Cutting Costs on a 45-Mile Canal

This 1,500,000 cubic yard ditch job on the Sun River Irrigation Project, Montana, was cleaned up in two seasons with two Westinghouse-driven Bucyrus dragline scrapers. Some interesting cost figures are available.

Electric drive was determined upon on account of the high cost of coal.

The larger machine is a Bucyrus class 24 with 100-ft. boom and 3½ yard bucket. The other is a class 20 Bucyrus with 85-ft. boom and a 2½ yard bucket.

Machines were hauled to the job knocked-down and were erected in the field.

Costs

Here's what each machine accomplished in cost-cutting in the three classifications of material handled:

TABLE 1—Excavation Costs in Cents Per Yard With Class 24 Electric Dragline Valued at $36,326.63.

Item	Class 1, 333,689 cu. yd.	Class 2, 23,319 cu. yd.	Class 3, 39,045 cu. d.
Interest on investment	0.81c	1.21c	2.25c
Preparatory expense	1.33	1.99	3.73
Plant depreciation	3.63	5.41	10.12
Executive	0.89	1.24	3.09
Labor	5.98	7.85	21.03
Electric power	0.73	1.03	1.82
Supplies	1.13	1.67	6.72
Miscellaneous	0.16	0.15	0.29
Total	14.66c	20.55c	49.05c

Table 2—Excavation Costs in Cents Per Yard With Class 20 Electric Dragline Valued at $20,957.13.

Item	Class 1, 410,747 cu. yd.	Class 2, 4,180 cu. yd.	Class 3, 9,546 cu. yd.
Interest on investment	0.44c	0.76c	1.61c
Preparatory expense	1.12	1.20	2.52
Plant depreciation	1.86	3.22	6.79
Executive	0.71	1.31	3.14
Labor	3.70	8.22	15.77
Electric power	0.78	1.78	2.80
Supplies	1.29	1.53	7.50
Total	9.90c	18.02c	40.13c

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To contractors who are confronting fuel problems, Westingouse offers the co-operation of its engineers.

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Constructed for the Very Heaviest Kind of Steam Shovel Rock Work
Meets Every Demand that Can Be Required of a Car of this Kind.
It's Built to Stand the Knocks—and Does—We Can Prove It.
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They have been Tried Out—and Not Found Wanting.

We Build Any Size or Style of Dump Car that Can Be Required for any Purpose and we Build them Right

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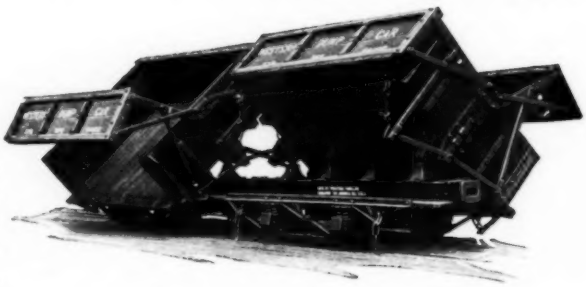
36-IN. GAUGE



Designed to give greater output at reduced cost. This car will hold 25% more than the 4-yard car and is built to stay on the track. You save in loading and unloading on account of fewer cars required to handle the same amount of material. This new car is built on the same lines of our celebrated special or heavy duty 4-yard car, which is now conceded to be without a rival on the market.

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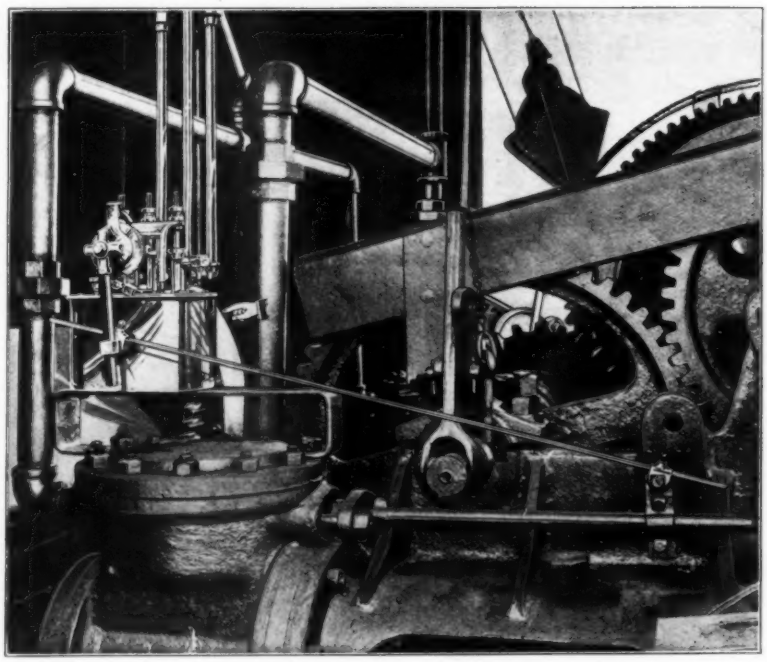
are operating on every description of cylinders.



They may be had in any number of Feeds and Compartments with Heaters, without any extra charge.

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LOOKING TO THE FUTURE

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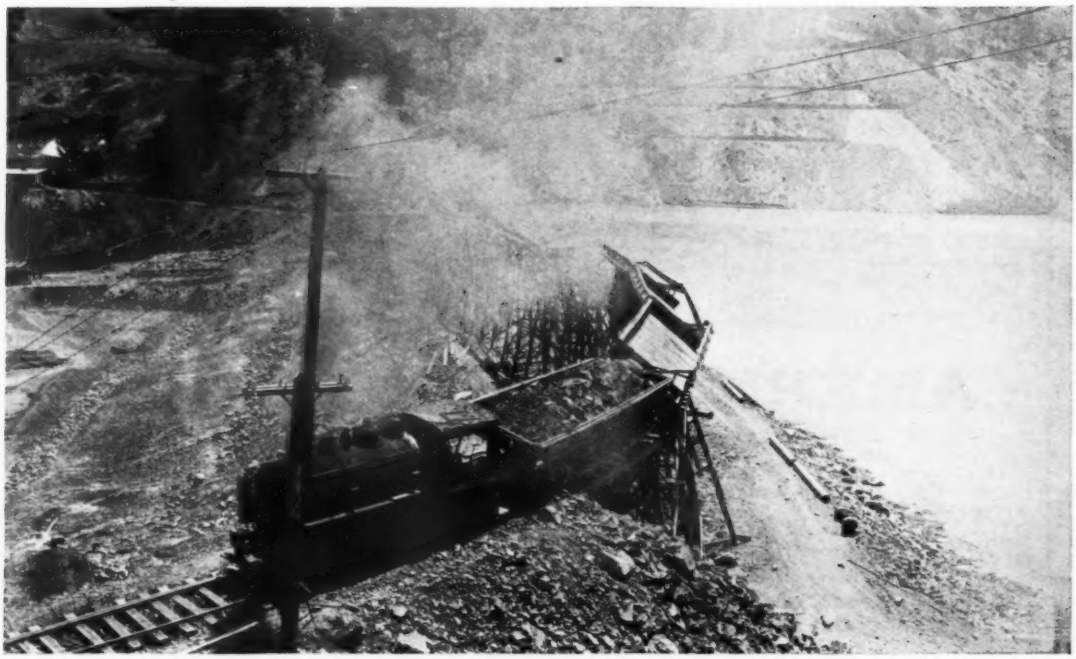
View of trestle and fill at down stream toe.



Cars dumping rock from trestle, Calaveras Dam.

Palmer & Mc Bryde's work on the Calaveras Dam. (See page 11.)

The Excavating Engineer

Vol. 13 OCTOBER, 1916 No. 1

A Splendid Achievement

A Class 45, 2½ yard Atlantic shovel loads 82500 cubic yards of Material in 24½ days of 10 hours each.

HENRY Steers, Inc., contracting engineers of New York City, have added another feat to their long list of successes in the contracting line, and are justly proud of the work performed by their Class-45 Atlantic steam shovel at South Amboy, Pa., on the Pennsylvania Railroad during the past three months.

In May 1916 they were awarded the contract for grading a new yard, filling in a trestle and making foundation embankments for a new heating plant to be used in connection with the coal unloading plant at South Amboy, N. J. for the Pennsylvania Railroad.

The plant used consisted of one Class-45 Atlantic steam shovel with a 2½ yard dipper, built in 1912; two 35-ton American locomotives and twenty 12-yard Western dump cars.

The material consisted of sand and clay, the greater part being sand and on the whole being excellent digging, easily handled by the Atlantic shovel.

Work was started on May 26th, 1916, in a bank

Class 45—2½ yard Atlantic shovel. This machine loaded 82500 cubic yards of material in 24½ days.

ranging from one foot to seven foot cutting, which a few years ago would have been considered too light for a steam shovel of this size to handle, but notwithstanding this handicap the shovel loaded 32,500 yards from May 26th to June 25th inclusive, with an average bank of four feet working 8 hours per day and not digging on Sundays. The cuts were not very long, which made it necessary to move back five times during this interval.

Considering the fact that more or less delays always occur when starting a new job, such as rainy weather, low bank, shortage of labor, and other minor causes, the above estimate was excellent, and far exceeded what was expected of the shovel.

Starting the second month on June 26th the bank continued to be light, averaging about four feet for the first two weeks, and the job went on a ten hour basis. During the latter part of the month the shovel worked in a fairly good bank, from seven to forty feet high, and on July 26th, the engineers gave the contractors an estimate of 52,500 yards. The shovel moved back four times and did not work July 3rd and 4th, so that the actual digging time for the month was about 20 days.

But the outfit had not yet reached its maximum gait. So on July 26th all the interested parties got together and decided to hang up a record for the coming month that would be hard to beat, with the result that from July 26th to August 25th inclusive, the shovel loaded 82,500 yards actual bank measurement. The bank during this interval varied from four feet to forty five feet in height and owing to the shortness of the cuts the machine was moved back three times. At places the bank was too high and some bad slides occured, occasioning a little delay at times. But owing to the fact that the circle and shipper shaft on an Atlantic shovel is higher than the average standard shovel, these delays were not as great as might be expected. During this month the shovel dug one Sunday, and lost three and one-half days moving back, making twenty-four and one-half ten hour days actually spent in digging, giving an average of approximately 3,400 yards daily.

During the first month the shovel moved and dug a space of 275 lineal feet in 8 hours on several occasions. This speaks for itself and gives an idea of the speed on this work. During the month of August, several times the shovel dug 4,000 yards per ten hour day, which I believe, is a high record for a shovel equipped with a 2½ yard dipper.

During this period of high speed, the only delays due to the shovel were caused by a broken hoisting rope and swinging cable. All the machinery on the work at the present writing is in first class condition.

The work is under the personal charge of superintendent M. B. Fitzpatrick, formerly with the Jno. B. Carter Co., and T. A. Gillespie Co. Mr. Fitzpatrick is a very capable superintendent of large experience on railroad construction work. He is a hustler and "on the job" every minute.

The shovel is in charge of Charles B. Ryan, engineer and Louis Banghton, cranesman.

The locomotives were ably handled by Wm. Campbell and Wm. Blake, two ex-railroad engineers.

All things considered, it looks as though the boys have hung up a record hard to beat.

To A Steam Shovel

By D. E. CHARLTON

Master of man's handiwork—thy ponderous form
was made
To cleave a fortune from the soils of earth.
Creature of steel—thy power absolute.
Impelled by steam, 'tis thine to make or to destroy.

Guided by thy master's steady hand,
His every move decides your path.
Through strata aged with unknown time
Your way is forged.

When civilization spread her path,
And coast to coast was joined with bonds of steel.
Thine was the aid that man did seek
To make his power felt among mankind.

A hiss of steam, the clank of chain,
And upward on its path thy mouth ascends
To empty to the waiting van
The offering snatched from earth's domain.

When man despaired the means to make
The joining of the seas, where once was land,
Thy aid was sought, the dream fulfilled,
And nations look with wonder at the deed.

A rugged constitution, built to stand
The buffets of our mother earth.
Thy way is ploughed with unresisting power
Through endless layers which ages have laid down.

In quest of metals, man has delved
Into the earth to claim that which was hidden there.
How small his efforts till you came
To do the work that all must sanction and applaud.

A burst of sparks, a whir of wheels,
As onward your course you drive.
Delaying for naught, like some huge beast you charge
Into the sullen bank.

Master of man's handiwork—thy ponderous frame
was made
To cleave a fortune from the soils of earth.
Creature of steel—thy power absolute.
Impelled by steam, 'tis thine to make or to destroy.

Palmer & McBryde Company's Work in California

The firm of Palmer & McBryde, engineers and contractors San Francisco, California, have two very important contracts under way at the present time in the state of California. One is known as the Calaveras Dam contract and the other is Western Pacific railroad work.

Calaveras Dam

The latter part of March this year they were awarded the contract by the Spring Valley Water Company for placing approximately 400,000 cubic yards of rock on the down stream slope of the Calaveras Dam. Shortly after closing the contract they started to move their equipment to the job. This equipment consisted of a 65-ton Bucyrus steam shovel, two standard gauge saddle tank dinkies and twelve 12-yard air operated Western dump cars. The distance from the nearest railroad station to the site of the dam was about ten miles over narrow mountain roads with grades from eight per cent to twenty per cent. Under these conditions, as may be

Palmer & McBryde's outfit on the road between Senol Road and office, double curve, 8 per cent grade, Calaveras Dam contract.

imagined, this proved to be quite an undertaking, especially so, as the outfit was moved under its own steam. However, owing to careful planning and handling, the entire trip was made without accident. It required about six weeks to move the equipment to the work. The accompanying photograph showing the moving operations gives an idea of the ruggedness of the country over which they had to pass. Work was begun about May 20th and has been progressing satisfactorily.

The Calaveras Dam is owned by the Spring Valley Water Company and is being constructed to supply water to the city of San Francisco.

The upper photograph on page 8 is a view of the trestle and fill at the down stream toe of the dam. The lower photograph on the same page shows the cars dumping the rock.

Western Pacific Railroad Work

Their work on the Western Pacific consists of 250,000 cubic yards of classified materials to be excavated from a cut less than half a mile in length. This material is being used to fill one high trestle and for making a line change.

The shovel equipment on this work consists of one 65-ton Bucyrus, one 70-ton Vulcan and one 25-B Bucyrus revolving shovel mounted on caterpillar traction. The auxiliary equipment for the 65-ton shovel consists of two broad gauge locomotives and two trains of Western side dump cars. A narrow gauge outfit is serving the 70-ton Vulcan shovel. The 25-B revolving shovel loads into end dump cars.

This work is on the Feather River Canyon near the railroad station of Blairsden, and according to the contract, must be completed before the winter sets in. It is progressing satisfactorily and is expected to be finished on time. The photograph on the front cover of this issue illustrates this work.

Cost of a Large Blast in Colorado

The following summary taken from Du Pont Magazine gives in detail the cost of preparing and firing a blast recently made at the quarry of The Colorado Portland Cement Company, Portland, Colorado:

Number of holes	44	
Spacing average	20 ft.	
Burden average	20.6 ft.	
Depth average	45 ft..	
Tons of rock broken	61,182	
Cubic yards	30,213	
Cost of drilling (labor)		$ 261.89
Cost of drilling (power)		24.00
Total cost of drilling		$ 285.89
Total feet of hole	2,094	
Cost per ft. of hole (drilling)		$ .1317
Cost per ton of rock (drilling)		.0064
Charge of powder per hole	265 lbs. to 425 lbs.	
Amount of Mon. powder in shot	14,850 lbs.	
Amount of Giant powder in shot	100 lbs.	
Cost of 44-42 ft. fuses at $0.1848		$ 8.13
Cost of 9-36 ft. fuses at $0.1632		1.47
Cost of 42-24 ft. fuses at $0.1200		5.04
Cost of Mon. at $0.125 including freight		1826.25
Cost of Giant at $0.115 including freight		11.50
Cost of shot (powder and fuse)		1852.39
Cost of shot (drilling and loading)		325.64
Total cost of shot		$2178.03
Cost per ton of rock (powder and fuse)		$ .0302
Cost per ton of rock (drilling)		.0046
Cost per ton of rock (loading)		.0006
Total cost per ton of rock		$ .0354
Number ft. of powder in all holes	1,294	
Number pounds of powder in shot	14,850	
Number of pounds of powder per ft. of hole from 5⅝ inch bit	12.25.	
Amount of rock broken per pound of powder:	4.0 tons.	
	2.03 yds.	

Results:

Shot appears to have broken up very good.

(Continued on Page 32.)

Loading cars

A loaded train

Left to right. W. I. Davis, W. K. Reekes and A. Wright.

A. & C. Wright's 70-C Bucyrus shovel

On the Southern Railway Double Track Work. A. and C. Wright, Contractors.

Southern Railway Double Track Work from Spartanburg to Wellford, South Carolina Completed

A. & C. Wright make fine progress on this contract moving approximately 200,000 cubic yards of material from November 1st, 1915 to July 31st, 1916 with a 70-C Bucyrus shovel.

LAST Fall, A. & C. Wright, contractors, Ashland, Va., were awarded the contract for double tracking the Southern Railway from Spartanburg, So. Carolina, to Wellford, So. Carolina, a distance of nine miles with a total of 200,000 cubic yards of material to be moved. The work involved a number of good-sized cuts and fills, the largest containing approximately 50,000 cubic yards of material.

Work was commenced on November 1st, 1915. The equipment consisted of one 70-C Bucyrus 2½ yard steam shovel, twenty-two Western "heavy duty" 4-yard cars and two 20-ton, 11 by 16 Davenport dinkies. The material was used for making fills along the road, the average haul being about 3,000 feet.

According to the engineers estimate to the contractors, the total material handled for the nine months was approximately 200,000 cubic yards, averaging about 22,000 yards per month, about 40 per cent of which was classified material under the Southern Railway specifications.

The work was rather difficult at some points on account of the lack of room which necessitated the use of gauntlet tracks on the main line and involved delays on account of trains passing and considerable expense on account of pilot crews, telegraph operators, etc. furnished by the railroad company, but charged to the contractor.

Some of the cuts were quite uniform, averaging about 12 feet in depth and of course were fairly easy to handle.

Owing to the high and wide dumping reach of the shovel, the contractors were enabled in some cuts to place the loading tracks on the bank outside of the slope stakes and load the material on the ground level, thus taking out all the material in one thorough cut. This method was found to be very economical and was used whenever possible. At points where the banks were a few feet too high for the shovel dipper to clear the cars, the loading tracks were depressed to the proper height. This work was done with teams and scrapers.

Mr. E. T. Gwathmey superintended the work. N. M. Parke was foreman. The shovel crew was as follows:—W. M. Steele, engineer, W. F. Terrell, cranesman, W. I. Feazer, fireman. Mr. A. Wright, assisted by W. K. Reekes and W. I. Davis, exercised a general supervision over the work.

Reclamation Officials Meet in Denver

MANAGERS of thirty-two reclamation and irrigation projects, upon which the government is expending $11,000,000 this year, met in Denver, Colorado on September 18th, 19th and 20th to estimate the amount of money needed for construction work on the various projects next year.

The present plans provide for the completion of the two great projects in Colorado, the Uncompahgre and the Grand Valley, by June 30, 1917. J. H. Miner, manager of the Grand Valley Project, and Fred D. Pyle, who has charge of the Uncompahgre Project, stated that the appropriation of $600,000 for this year would complete both of the great projects.

The meeting at the headquarters office of the reclamation service was called by F. E. Weymouth, chief of construction. Arthur Powell Davis, director and chief engineer, attended the conference. Following is the program:

"Concrete and Protection of Structures from Freezing," J. L. Lytel.

"Temporary Relief of Seeped Lands," with particular reference to relief needed, by whom determined and how, extent of relief, etc.; Andrew Weiss.

"The Organization for Operation and Maintenance of a Project," R. K. Tiffany.

"Care and Attention Necessary for Maintenance of Wood Pines," Calvin Casteel.

"Care and Attention Necessary for Maintenance of Metal Flumes," Fred D. Pyle.

"Losses from Canals and Protection from Seepage Losses," J. H. Miner.

"Methods of Delivery of Water," A. N. Burch.

"Maintenance and Stability of Canal Banks," J. B. Bond.

"Rules and Regulations for Determination of Irrigable Areas," D. W. Cole.

Basement Excavating in San Francisco

The accompanying illustrations are two views of a 14-B Bucyrus revolving shovel excavating a side hill and basement for a large apartment building at the corner of Post and Leavenworth Streets, San Francisco, California. The contract calls for the removal of 9,000 cubic yards of material consisting of hard shale, earth and boulders.

The contractors installed on the work the most modern equipment they could find, which consists of the steam shovel above mentioned and eight motor trucks for hauling the material away.

No unusual problems were encountered on the job, the feature being of course the extremely hard material to be handled. It was thought at first that blasting would be necessary before it could be loaded economically by the small shovel, but a trial soon convinced them that the machine could handle it without any trouble. On this job—material hard shale, earth and boulders—the shovel averaged 265 cubic yards per day. One of the photographs gives an idea of the hardness of the material and the mark of the dipper teeth on the bank may be plainly seen.

Carlin Bros. Shovel Dumping into Motor Truck.

View of Carlin Brothers Revolving Shovel. Note the marks of the dipper teeth on the bank.

Carlin Brothers, San Francisco, were the contractors. Steve Berrigan was the operator on the shovel and W. L. Garry, fireman.

Modern Romance

'Will you marry me, my pretty maid?"

"How many cylinders has your automobile, sir?" she said.

—*Louisville Courier-Journal.*

Not A Disease, A Gift

"Some un sick at yo' house, Mis' Carter?" inquired Lila. "Ah seed de doctah's kyar eroun' dar yestiddy."

"It was for my brother, Lila."

"Sho! What's he done got de matter of 'm?"

"Nobody seems to know what the disease is. He can eat and sleep as well as ever, he stays out all day long on the veranda in the sun, and seems as well as any one; but he can't do any work at all."

"He cain't—yo' says he cain't wuhk?"

"Not a stroke."

"Law, Mis' Carter, dat ain't no disease what you brothe' got! Dat's a gif'!"—*Everybody's.*

Concreting in Cold Weather

Concrete work can be carried on successfully in cold weather. All that is necessary is to heat the sand and pebbles or broken stone and mixing water so that the concrete mixture will have a certain minimum temperature, then to place the concrete quickly and maintain the heat until early hardening has been completed. This does not mean that there are no limitations to the practicability of doing concrete work in cold weather, but that if a few simple precautions and protective measures are used, winter concrete work will be as successful as that done in warm weather.

Remember that during the first few days following the placing of concrete, alternate freezing and thawing at comparatively short intervals will damage it. It is necessary therefore, to so mix, place and protect the concrete that early hardening will be complete before the work is exposed to freezing temperatures. Sand and pebbles or broken stone used must be free from frost or lumps of frozen material. If these materials contain frost or frozen lumps, thaw them out before using. As cement forms but a relatively small bulk of the materials in any batch of concrete, it need not be heated. Mixing water should always be heated.

Although adding common salt to mixing water will prevent freezing of concrete that has not hardened, there is a limit to the quantity of salt which may be added if the final strength of the concrete is not to be affected. Salt simply lowers the freezing point of the mixing water; it does not supply what is most needed—heat and warmth. It delays, instead of hastens, the hardening of the concrete.

Sand and pebbles or broken stone and mixing water must be heated so that the concrete when placed shall have a temperature of from 75 to 80 degrees. Some sands are injured by too much heat. The same applies to certain varieties of pebbles and broken stone. A temperature not exceeding 150 degrees Fahrenheit will generally prove most satisfactory. The concrete should be placed immediately after mixing so that none of the heat will be lost before placing in the forms.

Metal forms and reinforcing should be warmed before placing concrete. Care should be used to remove ice and snow and frozen concrete remaining on the forms from preceeding work. Forms can be warmed by turning a jet of steam against them or by wetting with hot water.

Even though materials have been heated and the concrete placed immediately after mixing, it will lose much of its heat if not protected from low temperatures. It should therefore, be protected immediately after placing. Canvas covering, sheathing, housing in the work, or hay or straw, properly applied will furnish the required protection for some work. In addition to these means, small oil or coke burning stove or salamanders may be used in enclosed structures. Temperatures which may not be low enough to freeze the concrete may, nevertheless, delay its hardening for a considerable time. Concrete placed when the temperature is low and remains low for some time afterward, should not be expected to be safe for use as soon as though placed during warmer weather.

If concreting is unavoidably delayed or interrupted, the work should be covered until concreting is again begun. Cover and protect any sections of the work as soon as completed. In severe cold weather, continue this protection for at least five days. Forms must not be removed from the concrete work too early. This applies to any concrete work, regardless of season, but is particularly important with work done during cold weather.

Frozen concrete sometimes very closely resembles concrete that has thoroughly hardened. When frozen concrete is struck with a hammer, it will often ring like properly hardened concrete. Before removing forms, examine the work carefully to see whether it has hardened or is simply frozen. To determine this, remove one board for some section of a form, pour hot water on the concrete or turn the flame of a plumber's blow torch or a jet of steam under pressure against the concrete. If frozen, the heat will soften the concrete by thawing the water contained in it.

Although concrete which freezes before early hardening has been completed may not be permanently injured, if after thawing out it is not again exposed to freezing until hardened, protecting the concrete against possibility of freezing is best.

Sufficient

A prominent Texan in Washington recently expressed doubt that the United States army should have been sent into Mexico to capture Villa, suggesting that a company of Texas Rangers would have been better. Which brought out the story of a certain well-known Ranger captain and a riot at Fort Worth, Texas.

Excited citizens wired to the governor for a company of Rangers to be sent without delay. Aid was promised. A large delegation of citizens met the train on which relief was supposed to come. A quiet little man with a broad felt hat on the back of his head alighted and was recognized as the captain of a company of Rangers.

"Captain," a half-dozen excited citizens exclaimed at once, "what does this mean? Where in the world is your company?"

"Company, hell!" the Ranger captain made answer. "They ain't but one riot heah, is they?"—*Everybody's Magazine.*

John B. Rose Company's Annual Inspection and Clam Bake.

By E. G. Lewis.

A party of about one hundred and fifty New York City contractors, engineers and representatives of the Public Service Commission and New York subway work, boarded the steamer "Hendrick Hudson" for Marlborough, New York, as the guests of the John B. Rose Company, bound for the above company's sand and gravel plant at Marlborough, New York, as the guests of Senator Rose, to their annual inspection and clam bake.

The party landed at Newburgh, New York, where they were joined by another hundred Hudson River contractors and state highway engineers and inspectors. The party was taken by automobiles from Newburgh to Marlborough, a distance of sixteen miles where they were met by Senator Rose himself, and his General Superintendent, Mr. George C. Hudson, and the inspection was made of perhaps the most modern gravel washing and crushing plant in the East.

175-B Revolving Shovel Digging Gravel. John B. Rose Company.

The gravel is taken from a bank having a face of about 175 feet in heighth, and a length of three-quarters of a mile. The material is excavated at the rate of 5000 cubic yards per day with a Bucyrus 175-B revolving shovel. The gravel is dumped by the shovel into a grizzley and is conveyed to the master Austin gyratory crusher which after passing through the smaller crushers is conveyed by a pan conveyor to the washing and screening plant, and is then conveyed to either the storage bins or direct to the scows, alongside the wharf.

At 2 o'clock in the afternoon, the clam bake was served, and it did not require a great amount of persuasion to get the guests around the table. It was an old fashioned New England clam bake and there was a bountiful supply of everything to be had, and let me add here, that it was a wise move on the part of the John B. Rose Company that the inspection was arranged before the feast, as very little energy was manifested on the part of the guests after the large quantity of clams, lobster, fish, chicken, melons, to say nothing of liquor refreshments, had been consumed.

The guests were very warm in their praise of this modern plant, and of the quality of material that the John B. Rose Company are furnishing for highway work, building construction, subway and street work in New York City and State.

It was a "show me" demonstration, and everybody present was fully convinced that they had been shown.

Our First Railway System

The first important railway system in North America, the Baltimore and Ohio, had its beginning eighty-eight years ago when ground was broken at Baltimore. The fourth of July of that year was a memorable one in the Maryland metropolis, and all business was suspended, while men from all over the state took part in the parade.

The ground breaking ceremony was conducted by Charles Carroll of Carrollton, the last survivor of the signers of the Declaration of Independence, who was then 92 years old. As he drove the spade into the earth the venerable statesman exclaimed: "I consider this among the most important acts of my life, second only to that of signing the Declaration of Independence, if second even to that." The city of Baltimore and the state of Maryland each contributed half a million dollars toward the construction of the railway. Horses were used at first to draw the cars and the first American built locomotive was constructed by Peter Cooper for this line. The railway was a development of the Chesapeake and Ohio Canal company, which in turn had its origin in the Potomac company, of which Washington was the first president.–Exchange.

The picture showed a bevy of shapely girls disrobing by the "old swimming pool" for a plunge. They had just taken off shoes, hats, and coats, and were beginning on— A passing freight-train obscures the view. The next picture shows them in the water.

An old railroader sat through the show again and again.

Finally a friend tapped him on the shoulder and said:

"Aren't you ever going home?"

"Oh, I'll wait a while," was the answer. "One of these days that train is going to be late."—*The Right Way.*

Preparing the Roadbed for Brick Roads

In forming a roadbed upon which a brick pavement is to be constructed, the essential features to be considered are (1) thorough drainage, (2) firmness, (3) uniformity in grade and cross section, and (4) adequate shoulders.

Thorough drainage can be secured for any particular road only by means of a careful study of the local conditions which affect the accumulation and "run-off" of both the surface and ground water. These conditions vary considerably even in the same locality, and no set of rules can be given which would cover all cases. For example, the material composing the roadbed may be springy, and in this case tile underdrains will probably be necessary. On the other hand, extremely flat topography may make it necessary to elevate the grade considerably above the surrounding land. The nature of the soil, the topography, and the rainfall must all be considered if a system of drainage is to be planned properly.

The second requirement, firmness, can be secured only after the road has been properly drained. Soils which readily absorb moisture can not be properly drained in wet weather and should not be permitted to form a part of the subgrade. In order that the subgrade may be unyielding, it is also necessary that the roadbed be thoroughly compacted. In forming embankments the material should be put down in layers not over 8 inches thick, and each layer should be thoroughly rolled. In excavation care should be exercised, if the material is earth, not to permit plows or scrapers to penetrate below the subgrade. The subgrade in both excavation and embankment should be brought to its final shape by means of fine grading with picks and shovels and rolling.

When completed the subgrade should be uniform in grade and cross section; otherwise the foundation must be made unnecessarily thick where depressions occur, in order that its grade and cross section may be uniform and its thickness not less at any point than that required. The subgrade should be repeatedly rolled and reshaped until the desired shape is secured. If curbs are constructed independent of the base they should be set before the final finishing, in order that they may be made to serve as a guide for this work.

The shoulders should never be less than 4 feet wide and should consist of some material which compacts readily under the roller and does not readily absorb water. Not infrequently one of the shoulders is made sufficiently wide to form an earth roadway parallel to the brick pavement. Such an arrangement serves to relieve the pavement of considerable traffic during favorable seasons and also affords some advantage to horse-drawn traffic. The general method of constructing shoulders for brick roads is not essentially different from that employed for other types of pavements.—From Bulletin No. 373 U. S. Dept. of Agriculture.

Building Operations in 1915

Building operations in many of the larger cities of the country increased in 1915, according to the United States Geological Survey. In 48 selected cities the total cost of building operations was $641,769,199, an increase of $22,016,845, or nearly 4 per cent over 1914. Twenty-eight of these cities showed increase and twenty showed decrease. New York was the leading city in cost of building operations, with $103,023,800, an increase of $28,993,559 over 1914. Chicago, which was the leading city in 1914, was second in 1915, with building operations costing $97,291,400, an increase of $14,029,690. Brooklyn was third, with a total of $45,601,851, an increase of $3,729,544 over 1914. The average cost per operation was $3,190 in 1915, compared with $3,042 in 1914.

A Notable Concrete Arch

One of the largest single concrete arches in the world, weighing 11,000 tons and costing $60,000 will be built by the Salt Lake Railroad at the intersection of Sawmill Canyon and Clover Creek, Nevada. The arch will be 93 feet long, 23 feet high and extend 18 feet below the stream bed, and will be capable of sustaining 73,680 tons. The big arch will be built beneath and around the trestle now in use there, and as it changes from wet concrete into solid artificial stone, the trestles will be removed while traffic is carried on all the time. 165,000 feet of lumber will be used to keep the concrete from touching the trestles. The improvement was directed by General Manager, H. C. Nutt, and was designed by the Chief Engineer of the road, Mr. Arthur Maguire.

Security Wanted

Mr. Ball met a man whom he knew one morning on his way to the office, and the man asked for a loan.

"Suppose I decide," said Mr. Ball, "to let you have the money, how do I know that I shall get it back at the time you mention?"

"I promise it," replied the man, "on the word of a gentleman."

"Well," replied Mr. Ball, "in that case I may conclude to do it. Come around to my house this evening and bring him with you."—*Exchange.*

Kid—How did you get the red marks on your nose, Uncle?
Uncle—Glasses, my boy.
Kid—Glasses of what?—*Ideal Power.*

The Excavating Engineer

A Monthly Publication Devoted to Excavating *and* Allied Subjects

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Bradlee Van Brunt, Manager and Editor

2671 National Avenue Milwaukee, Wis., U. S. A.

Construction Outlook

Reports of substantial progress in construction work under way in various parts of the country continue to come in and, excepting the shortage of labor, conditions as a whole have been favorable for contract work for the past several months. It is not expected that any large railroad projects will come up for serious consideration for some time on account of the high cost of materials and the railroad labor problem which is still far from being definitely settled.

Interesting news comes from Chicago in connection with the proposed Illinois Central Railroad terminal improvements. A. S. Baldwin, chief engineer of the system, presented to the Chicago Council Terminal Committee on September 20th, tentative plans for a vast terminal, estimated to cost $20,000,000 and designed to accommodate all railroads entering Chicago with the exception of those using the Northwestern and Union stations. A union terminal at Twelfth street was one of the recommendations of the Chicago Railway Terminals Commission, and it is believed in some railroad circles, that many of the roads could be induced to enter such a terminal. The plans as submitted, however, cannot in any sense be considered definite, as the realization of the project depends on the ability of the Illinois Central to get the other railroads to go in with them.

Drawings and maps were submitted by Mr. Baldwin. The head house of the proposed terminal is of Ionic architecture, in the monumental style. It is designed to harmonize with the new Field Museum, just east of the station site. The central feature of the station is a triple arch crowned with a sculptured cornice, the whole building being surmounted by a dome. The head house proper is about six stories high, 700 feet wide, and 250 feet deep.

Tracks will enter the station on three levels, the uppermost carrying twenty-four passenger tracks on the level of the main floor of the station, which will be level with Twelfth street. The next lower level of tracks will be devoted to freight, and the third level is to be a subway extending from Twenty-Second street north to the station, carrying suburban traffic.

Under the tentative plans, the head house and concourse will extend from the south line of the widened Twelfth street to Sixteenth street. The entrance proper is to be on Twelfth street. A hundred foot driveway, as an extension of Indiana avenue to Twelfth street, is to be left open between the station and a proposed hotel building at Michigan avenue and Twelfth street.

The architectural features of the plans were designed by E. F. McLaughlin and George Birrbach of the Illinois Central Building Department.

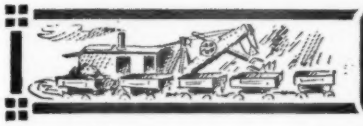
Progress in Uniform Boiler Laws

Almost two years have elapsed since the Boiler Code of the American Society of Mechanical Engineers was completed, and it will no doubt be of interest to our readers to have a brief review of the work done by the American Uniform Boiler Law Society, which has undertaken the work of bringing this code to the attention of the various state legislatures wishing to enact boiler laws.

The states in which the ASME Code boilers are now accepted are Ohio, Pennsylvania and Wisconsin. In Indiana the Code boilers are also accepted, provided their construction does not interfere with certain minor points specifically laid down in rules adopted by the Industrial Commission of Indiana. This situation, it is expected, will be cleared up at the coming session of the Indiana legislature. In California the adoption of the code is in the hands of the Industrial Accident Commission, and in all probability the code will go into effect there on the first of January, 1917.

In the following states the adoption of the ASME Code was taken up, but so far the matter has not been settled. Usually the cause for delay has been some technical obstruction, such as the requirement of New Jersey, that the code must be printed in the

(Continued on next page)



· FIELD NOTES ·

QUESTIONS pertaining to the operation, maintenance or repair of excavating machinery wil be answered through this column. Address, Field Note Department, Excavating Engineer, P. O. Box 607, Milwaukee, Wisconsin.

A Steam Shovel Report Form

We publish below another fac-simile of a steam shovel report form. This report was prepared by Mr. L. T. Russell, now Western Sales Agent of the Bucyrus Company, at the time that work started on the Dalles-Celilo Canal and was used to a considerable extent thereon by the United States Engineer Department. The form was intended for use in connection with foremen's slips which were turned in daily. One of these slips was made up by the dump boss, one by the steam shovel engineer and one by the general foreman. Each showed the number of men employed together with their rates of pay and the hours worked. The three together were intended to cover all material and labor used in connection with one day's work. Each evening or on the following morning, the time-keeper filled out the report blank reproduced below from the information given on the above mentioned slip. This he submitted to a limited extent from his own time book. The good feature of this form is that it not only gives the record of the day's excavating and the cost thereof, but it carries forward each day the amount of excavation done to date, as well as the cost. This report blank worked out very well in practice.

U. S. E. D.

Div._____ Shovel No._____ 191_

NO.	DESIGNATION.	HRS.	AMOUNT.		
	Foreman			No. of Cars Bro't For'd	
	S. S. Engineer			" " Loaded	
	" Craneman			Total Cars to Date	
	" Firemen			Cost Bro't For'd	$
	Jackmen			" to Date	$
	Pilmen			Total Cost to Date	$
	Labor: Hand Drilling			REMARKS AND DELAYS:	
	Watchmen				
	Team and Teamster				
	Labor: Miscellaneous				
	Supplies: Coal Tons				
	" Oil and Waste				
	" Miscellaneous				
	SHOVEL EXPENSE				
	Engineman				
	Fireman				
	Brakeman				
	Labor: Miscellaneous				
	Supplies: Coal Tons				
	" Oil and Waste				
	" Miscellaneous				
	TRANSPORTING EXPENSE			$	
	Dump Foreman				
	Second-class Laborers				
	Labor: Miscellaneous				
	BUMPING EXPENSE			$	
	Powder Foreman				
	Powdermen				
	First-class Laborers				
	Labor: Miscellaneous				
	Supplies: Powder				
	" Caps and Fuse				
	" Miscellaneous				
	BLASTING EXPENSE			$	
	Machine Runners				
	Chucktenders				
	Nippers				
	Fireman				
	Blacksmith Expense				
	Supplies: Coal Tons				
	" Oil and Waste				
	" Miscellaneous				
	DRILLING EXPENSE			$	
	Track Foreman				
	Second-class Laborers				
	Labor: Miscellaneous				
	Supplies: Spikes				
	" Bolts and Fishplates				
	Track Expense			$	
	TOTAL DAILY EXPENSE			$	

Progress in Uniform Boiler Laws

(Continued from preceeding page)

bill in its entirety. The work that has been done in these states will make the adoption of the code an easy matter at the next session. The states referred to are Florida, Georgia, Kansas, Louisiana, Maryland, Michigan, New Jersey, New York, Rhode Island and Virginia.

In the following states the work of the society has been taken up through individuals or organizations, with a view of bringing it before the legislatures at the next session. These states are Alabama, Illinois, Minnesota, Mississippi, Oregon, South Carolina, Tennessee and Washington.

A most encouraging development in this connection is illustrated by the specifications sent out by the Purchasing Department of the Panama Canal, through its engineer, Earl A. Brown, major of the Engineering Corps, U. S. A. These specifications cover a boiler required for the Canal Zone and contain the following clause:

> "Boiler to be constructed in accordance with the rules for the construction and installation of steam boilers issued by the American Society of Mechanical Engineers. Alternate bids will also be considered on other classes of boilers."

This partial recognition of the Code by the Government points, we believe, to the general adoption of the Code by Government engineers.

It therefore appears that the more populous states have the adoption of the ASME Code under consideration and it would seem that the day is not far distant when a close approach to uniformity will be accomplished. In order to assist as much as possible in this movement we again suggest that our readers urge the adoption of this code at every opportunity, as public sentiment is the real requirement to this end.

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40-R Bucyrus Traction wheel steam shovel in rock quarry. United States Portland Cement Co., Concrete, Colo.

14-B Bucyrus shovel in a 4[illegible] r[illegible]
County, Calif. [illegible]M[illegible]

Two class-7 dragline excavators, Winnipeg Aqueduct Construction Company, Winnipeg, Man. Wm. Small, Superintendent.

Front view of R. B. Markl[illegible] show

14-B Revolving shovel. Highway work. Notice the heavy work which the shovel is handling. Franklin Construction Co.

rock cut, highway work, Marion
Markle, Contractor.

hovel. Harry Hauser, engineer.

14-B Revolving shovel making a rock cut on highway work. Wright-Johnstone Contracting Co., Topton, N. C.

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DEVICES YOU OUGHT TO KNOW ABOUT

Tiger Steel Bunks

A new feature in the construction of steel bunks, is the device here shown, which illustrates a boltless, locking device, of the Tiger steel bunk. The corner of the bunk, shown in detail, is a view taken from the side of the bunk. The angle side rail is notched, near the end of the rail. This engages with a flange which is riveted to the angle, which forms the upright of the frame. A swinging lug, which is shown immediately above these two parts, is brought down to rest on the upper surface of the side angle, thus making firm joint between the slotted part of the angle, and the flange on the upright piece. It is a perfectly rigid piece, and requires no tools, to complete the operation.

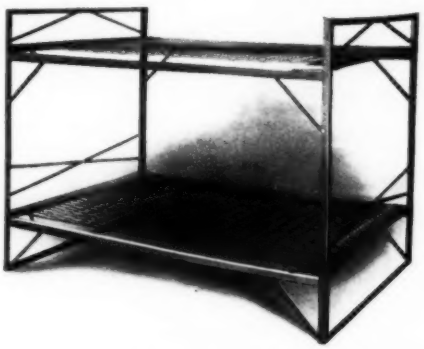
Simply slip the angle side rail over the flange, and hammer the lug into place.

This device is offered for the convenience of those who shift camp frequently. Road builders appreciate this.

The Tiger steel bunk, when completely set up presents the appearance as here illustrated, and this is doubtless familiar to the readers of Excavating

Engineer, for the Haggard & Marcusson Company have for years shown their Tiger Bunks in the advertising columns of this paper. Indeed it is not necessary to depend upon the printer's ink for a view of these bunks, for they are in use all over the country in all classes of work, and have stood the test of between ten and twelve years of service.

The steel bunk has made a place for itself in modern camp equipment. It is much more sanitary and more durable than the old style wooden bunk or wooden cot. The wire link fabric, with the



helical springs, makes a comfortable bed, and in these beds, when the question of securing satisfactory labor is so important, a good bed, under sanitary conditions has much to do with the completion of a job, with a profit, or without one.

Tiger steel bunks are made by Haggard & Marcusson Co., 1113 W. 37th Street, Chicago, Ill.

REVIEW OF BOOKS and CATALOGS

We shall be glad to review in this column such books and catalogs as are sent to us. Books reviewed in these columns will be supplied by The Excavating Engineer Publishing Company at the price named.

CONCRETE SEWERS:—6 by 9, 42 pages. An illustrated bulletin showing the advantages of concrete sewers. For free distribution. Portland Cement Association, 111 West Washington St., Chicago, Ill.

ELECTRIC HOISTS:—6 by 9, 92 pages and cover. Mead-Morrison Catalogue "H-3" describing and illustrating hoisting machinery for quarrymen, contractors and bridge builders; railroad, dock, sewer and subway construction; dredging, logging, hauling, erecting and driving; ships, docks, coal wharves, mines etc. Mead-Morrison Mfg. Co., East Boston, Mass.

BRICK ROADS:—6 by 9, 40 pages and cover. Bulletin No. 373, United States Department of Agriculture. Professional paper by Vernon M. Peirce, chief of construction and Charles M. Moorfield, senior highway engineer. Illustrated. United States Dept. of Agriculture, Washington, D. C.

SHOTS FROM THE · FIRING LINE ·

Arizona

Otto Momsen is erecting a class-14 gasoline dragline for the U. S. Reclamation Service at Yuma.

Arkansas

The Commissioners of Drainage District Number Eight, Crittenden County, Arkansas, received bids for the construction of about 1,350,000 cubic yards of earth excavation at the Court House at Marion, Arkansas, on September 21, 1916.

Three contracts are suitable for dipper dredges and the fourth contract is suitable for a dragline machine.

Plans and specifications may be secured from the Morgan Engineering Company, Memphis, Tennessee.

California

San Francisco and Vicinity

By G. H. Hutchinson

On September 19th bids closed in Los Angeles for the excavation of 120,000 yards for the Los Angeles Terminal Company, John Parkinson Security Bldg., is engineer. The above company plan on spending $2,500,000 in the erection of two concrete market buildings two stories high, one 41 x 1,260 feet in length, the others 80 x 1,279 feet. We have a hunch Bucyrus shovels will be used on this job.

Bent Brothers, Central Bldg., Los Angeles, are low bidders at $127,137.08 for constructing 10.63 miles of Section D Mine Canyon Road, Los Angeles Co. They will probably be awarded the contract, 94,725 cubic yards excavation.

Thompson Brothers, Fresno, California, were awarded the contract at $62,059.42 for improving 17½ miles of county highway in Fresno County recently.

A. J. Reece who hails from Seattle, Wash., has been operating a Lidgerwood dragline for S. R. Fox at Byron, Cal. The work was in connection with the Byron-Bethany Irrigation Project consisting of the removal of 80,000 yards of earth. The canal was three-quarters of a mile long with a 10 foot bottom averaging about a 50 foot top with a berm on each side of 10 feet. It was necessary to blast the surface only and the rest was comparatively easy digging. Cuts were from 12 to 19 feet deep and the job was completed in 5½ months.

This canal is an extension of Italian Slew. At the south end of the canal a pumping station is being installed consisting of three 38-inch centrifugal pumps, guaranteed to handle 30,000 gallons per minute each. The discharge lines from the pumps passes through conduits of concrete. The water is pumped up in about 30 foot lifts and will be used for irrigating 30,000 acres of land.

The Southern Lassen irrigation district in Lassen county, Cal., has completed surveys for an irrigation project eventually to involve the spending of several millions of dollars. A bond election will probably be held within the next sixty days to vote on an issue of upwards of a million dollars to be used in constructing the first part of the work. This will include 60 to 75 miles of concrete lined canals and one dam to retain floodwaters. Wm. L. Wales, Woodland, Cal., is engineer for the district.

A new irrigation district is being formed in the same valley (Honey Lake Valley) on the north side. Col. Bolton of Amedee, Cal., is the leading spirit in developing this project.

The Oakland Paving Co., Oakland, Cal., road and street contractors, have quite a profitable side line in the production of "Clean Blue Crushed Rock," said to be an excellent material for concrete work of all kinds as well as macadam paving. The firm was established 46 years ago—quite an old business for a Pacific coast state.

Canada

Chatham, N. B.—Wm. A Hubbard is at present running Bucyrus shovel No. 1576 for the Bathurst Lumber Company, Bathurst, N. B.

Montreal and Vicinity

By B. St. John

L. A. Ott has finished his contract for the Quebec Battlefields Improvement Association at Quebec, and has moved his outfit to Montreal. He is now open for any kind of contract.

McDougal Bros., contractors, on the East River Improvement at New Glasgow, N. S., are starting their 70-C Bucyrus steam shovel on the last cut, after being idle for a long time.

The Cook Construction Company, Ltd., are getting along very well on the Montreal Aqueduct. They are figuring on starting another class-14 dragline about the first of October. Any dragline men looking for a job might do well to communicate with the above company: Address Cook Construction Company, Ltd., McGill Building, Montreal.

Contractors on the St. John Valley Railway are making splendid progress. They are having ideal weather, and have been fortunate in securing labor locally.

It is rumored that the Quebec-Saguenay Railway contract has been given to O'Brien & Coheny of this city, who had the contract before this work was abandoned. We understand that a great many of the sub-contractors who left their equipment on this work will be given preference when the sub-contracts are let.

Vancouver and Vicinity

By A. G. Brown

The Canadian Pacific Railway Co. let a contract to W. D. Grant, of Vancouver, for the carrying out of a comprehensive dredging scheme on the water-front. The contract will entail an outlay of some $200,000.

Mr. D'Arcy Tate, vice-president of the Pacific Great Eastern Railway Co., accompanied by Hon. Orne A. Campbell, Minister of Mines, recently inspected the company's line from Squamish to Clinton. Work on the completion of the balance of the line from Clinton, the point furthest north to which steel has been laid, is now being undertaken and will be pushed ahead as fast as Work has already started from the Prince George end, where the contractors, Messrs. Carleton & Co., have several gangs of men at work clearing cuts and preparing for the completion of the grade preparatory to the laying of steel. The company, owing to the enormous demand for steel for war purposes, is meeting with difficulty in securing rails, but it has a considerable supply on hand and it is expected another shipment will shortly arrive on this coast. Following Mr. Tate's trip and conference with the contractors further arrangements for the prosecution of the work will be perfected and announced at an early date.

A new automobile highway through the Revelstoke National Park, in British Columbia, which has been completed for a distance of 11 miles, was formally opened recently by H. R. H. the Duke of Connaught. The area of the park through which the road leads is over 57,600 acres, being created by the Dominion Government by order-in-council on April 28, 1914.

Hon. Edgar Dewdney, former lieutenant-governor of British Columbia, died recently at his home in Victoria, B. C. He was

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born and educated in Devonshire, England, and immigrated to British Columbia in 1859, being employed by Sir James Douglas and Colonel Moody in the laying out of New Westminster. He spent many years practising his profession of civil engineer in building roads through the country, and was responsible for the completion of the Dewdney Trail from New Westminster to the eastern boundary of the province, in 1865.

The Canadian Northern Railway Co. has started work upon its Kamloops-Kelowna line, and one gang of 50 men is now employed on rock work on Long Lake, near Vernon. Work has also been commenced upon the bridge across the Thompson at Kamloops, connecting the Keowna branch line with the main line of the company.

British Columbia is this year producing copper at the rate of $20,000,000 per annum. The total copper production of the province is now at the rate of 90,000,000 pounds a year, and when the new mines now being developed are in a producing condition, as they will be in from six months to a year, the annual output will reach 110,000,000 pounds. This great total will be further increased by close to 20,000,000 pounds when the new mill at Britannia is completed. At average copper prices, the yield of 130,000,000 pounds will therefore be about $30,000,000, nearly double the production of 1915.

The Department of Public Works, Ottawa, authorized the Marsh, Hurron Powers Co., Western Trust Block, New Westminster, to proceed with the construction of the last unit of the jetty, Steveston. Estimated cost, $500,000.

Contract for the construction of Section "B" of the Coal Harbor causeway Vancouver, was awarded by the City Council to the Cotton Co., Limited, at $40,986. Contract for Section "A" not yet awarded.

Fred Brewer is rebuilding a class-24 dragline at Wasego, Ontario, for Randolph & McDonald. This machine was recently destroyed by fire.

Colorado

Denver and Vicinity

By H. N. Steinbarger

Herman Hasselman dropped in during the past month just to look the old town over and incidentally look up a few laborers, for the Clark Hasselman contract at Sterling, Colo. Labor is mighty scarce at the present time, and their work as well as practically all other contracts in this section are not moving as rapidly as would be the case with a full organization. Their contract, however, is moving along nicely, and expect to finish up during the fall or early winter. Herman is sprucing up considerably these days, and appears younger every time he visits this section. We don't know what causes all of this, but it begins to look a little suspicious. He, however, denies any motive other than he wants to appear like city folks when he is in the city.

John Young of Young & Crook came in from their Union Pacific work near Castle Rock, Utah, some three weeks ago, and as usual got everybody at all inclined to wager a "little bit" now and then, stirred up considerably over the coming presidential election. John has some force about his make up. It is perhaps best described by hypnotic influence. How it works is illustrated by telling how he got Jim Davies so up in the air that he bet $1,000 that Hughes would defeat Wilson in the coming presidential election. Think of it, Jim sat down at the desk and wrote out a check for $1,000 They only talked a $100 wager at first, but Jim felt so strong in his right arm that when he sat down to write it out he said let us make it $1,000. Now if there is anything on earth John Young is willing to do, its raise a bet, no matter whether its poker, pitch, or what it is, he is perfectly willing to raise any time or anybody. About that time Frank Mulvihill happened along as he usually does when there is anything stirring, and they made him stake holder Now it must have been hypnotism, because the moment John got out of sight, Jim began to think about the pitch games that used to hold forth, and he got to figuring that everyone of the pitch club members were now out on work that will take them from three to five months to complete, and he decided there was no chance in the world for him to make up that $1,000. Getting cold feet cooled off his brain a little so he immediately got busy on Frank Mulvihill with a little hypnotism on his own account, made some remark about making a mistake in the amount of the check, asked to see it, and when he got his fingers on it, it was all off; because in about two minutes the check was in pieces and could never be patched together. John Young is still roving around trying to pull that bet out again, but he has lost his influence. Our private opinion however, is that John is very fortunate in having the bet called off.

The Platte River Sand & Gravel Company of Denver are making great strides with their big gravel excavating, washing and screening plant in South Denver. It was started a little over two years ago on a comparatively small scale, and has grown to such proportions that added facilities for washing and handling the material to and away from the plant, are continuously being made. C. S. Lambie of this company, also president of the C. S. Lambie Company, Engineers & Contractors, has the "push and shove method" of doing business down pat. At the present time he is about the busiest contractor in the Intermountain section, using large quantities of the product of the sand and gravel company in his own contracting work. They have recently added two locomotives and a string of dump cars to the gravel plant, and a short time ago purchased a locomotive crane for the same service. Material from now on will be handled from the bed of the Platte River, into dump dars, thence to the washing plant.

The Gaffy & Keefe Construction Company, Denver, are making great strides in their hard surfaced road contract on the south Golden road. They have 4.8 miles of concrete paving. The work was held up considerably due to the necessity of keeping open the road during mobilization of the Colorado National Guard. This and other contingencies prevented starting the work for two or three months; however, it is well under way, and a large force employed, and with the most modern machinery there is no doubt but what it will be finished within schedule time.

Pat Fitzgerald returned to Denver for a few days last month to order a few supplies, and get some labor, and look the town over a little bit. Pat has been sticking pretty close to his job on the Union Pacific work near Wasatch, Utah. At the present time he is not only using his elevating grader and dump wagon outfit, but also a steam shovel. He has a big string of wagons serving the shovel, and at the present time is making great headway. The work was held up for a time due to lack of labor, but barring this he will undoubtedly finish up in good time and good shape.

Allen & Lafferty have been using a shovel obtained from the Utah Construction Company on some of their difficult work near Castle Rock, Utah, on the Union Pacific Line. They had a total of 275,000 yards of material to handle and the shovel and several elevating grader outfits are boosting the work along in good shape. It's all going so well that Geo. Allen has considerable time these days to stir things up around Denver, Colorado Springs, etc. A new Studebaker Six helps him along nicely. He was seen by several of his friends around Colorado Springs, Colorado, on labor day. Ostensibly he went down there to see the "Light Weight" championship scrap, but leave it to George to kill two birds with one stone. Don't misunderstand us—if any more information is wanted and George won't give it just ask his friends.

"Doc" Conover is galavanting around Denver these days as proud as a game cock after licking all the roosters in the neighborhood. He's got a big reason, 10,000 reasons as a matter of fact, i.e., 10,000 bushels of wheat all threshed, sold and the money in the coffers. His outfit is at it again, plowing for the winter sowing, so there is no chance of his teams eating up all profits.

G. W. Hamilton spent ten days in Denver last month. Busy as a bee, as usual, first getting Mrs. Hamilton and her mother off on a trip to Chicago and Detroit, then buying equipment to use in trimming down the slopes on their big fill on the U. P. R. R. work at Castle Rock, Utah. They and Dooling Bros. are adopting modern methods which makes "pay dirt" out of every yard handled. A hoist, a drag scraper, 5 yards capacity, a dragline cable, and a retrieving cable does the trick.

Charlie Dooling is the quietest man along the U. P. Line. No Guernsey, Wyoming out that way. Of course Evanston, a nice little town, is nearby, but "they ain't nothing doin." They don't grow 'em there. Feathers, yes of course, but not the plumage. Here's hoping there will be a new and variagated flock at the next stopping place.

Illinois

George Stanford is operating a new 88-C Bucyrus shovel for German-American Portland Cement Co., La Salle. George says that she is the best he has ever been on and "so just like getting money from home to run her."

George W. Williams is at present erecting a 14-B for the Commercial Stone Co., at Joliet.

Nash-Dowdle Company were low bidders at $841,630.75 for contract No. 1, Evanston intercepting sewer of concrete. Their bid for brick was $904,347.00.

Indiana

Otto Momsen has finished the erection of a class-14 dragline for W. J. Hoy, at Decker.

Kansas

Pittsburg and Vicinity

By W. S. Russell

The weather for the past month has been moderately warm with several cool spells which has been a great relief from the fearful heat during July and August. A moderate amount of rain has fallen, but too late to save the fields of corn from turning yellow and giving only half a yield.

The coal market is firm and a slight advance in prices is predicted within a short time as coal dealers have not stocked up as yet and when they start in there will be a rush of orders that will start prices upward.

We note from trade journals that prices on bituminous coal in Illinois and Indiana have advanced materially during the past month and are higher than for several years. The industrial demand is extremely heavy as all factories are running overtime, and during the railroad strike scare the roads took up large quantities of extra coal which is tying up thousands of cars loaded with company coal. This makes the car shortage worse than ever.

It is apparent that the increased price of Illinois coal will offset the low freight rate put in effect by the Chicago & Alton Railroad so that it will balance up and the usual demand for Kansas coal will not be affected to any extent.

We quote prices per ton in the Kansas field as follows: Lump, $2.25; Nut, $2.25; Mine Run, $2.00; Mill Run, $1.75; Slack, $1.50 F. O. B. railroad cars at mines.

The long drawn out conference between the coal operators and the miners Union at Kansas City has been settled at last, and the mines are all working after a suspension of about ten days.

The D. H. Whitmer Contracting Company are getting along fine with their coal stripping near Frontenac, on a field of 300 acres, the greater portion of which has been mined out. They are operating a model-271 Marion steam shovel carrying a 5-yard dipper and having a capacity to handle from 2,500 to 3,000 cubic yards of ordinary material per day. The overburden is 35 feet in depth consisting of blue shale, soft sand rock and sandy clay. The coal is 3 feet thick and of the best quality. It is taken over by Jackson & Walker, fuel agents for the Santa Fe Railroad.

The coal is mined out by hand and loaded into tram cars of 3 tons capacity, which are lifted out of the pit by a revolving crane having a 60 foot boom and weighing about 40 tons. The cars are placed on the loading track and are handled in trains of 10 to 12 cars to the tipple by a dinkey locomotive. Thus from 350 to 400 tons of coal are produced daily, or an average of from 7,000 to 8,000 tons per month. D. H. Whitmer is president and general manager giving his personal attention to the business, and being ably assisted by Chas. M. Bugbee, superintendent in charge of field operations.

The Mulberry Coal Company have had their new model-300 Marion steam shovel in operation about six weeks on a field of 160 acres at Ardath, Mo., on the Kansas City Southern Railroad. The overburden is from 10 to 24 feet deep averaging about 16 feet. The coal is 28 inches thick, and has numerous horse backs extending through it. John Italiani is president and general manager of the company.

The Clemens Coal Company have installed a revolving crane built by the Bucyrus Company in their strip pit near Minden, for lifting the loaded tram cars out of the pit and placing them on the loading track up on the main ground level. This machine is fitted with a 65-foot boom weighs 40 tons and will lift 4½ tons on a 52-foot radius.

The Ellsworth-Klaner Company are rebuilding one of their model-271 Marion shovels near Chicopee which when finished will be better than ever. S. P. Darrow is superintendent in charge of the work. This company have three other steam shovels stripping coal for the Pittsburg, Midway Coal Company, over in Missouri just across the state line. J. F. Klaner is general manager with offices in the Globe Bldg., Pittsburg. This firm has the largest equipment of any of the coal strippers in the Kansas fields.

D. B. Gore of New Orleans, vice-president of the D. B. Gore Contracting Company, spent several days in Pittsburg last month looking over coal stripping operations. He was particularly interested in finding that the big Bucyrus coal stripping steam shovels were able to dig the soft sand rock and hard blue shale encountered without blasting. His company have secured 200 acres of strip coal land in Alabama, and will develop it in the near future.

E. S. Nevius, president of the Nevius Coal Company came down from Kansas City last week to look after his coal mines in this district.

W. C. Shanks, chief engineer of the J. R. Crowe Coal Mining Company was a guest at the Stilwell Hotel one day last week.

C. E. Beechwood the well known supply man of Joplin, comes over to Pittsburg quite often to look after the interests of his customers. He reports business in their line to be very good.

R. A. Gray, manager of the J. R. Crowe Coal Mining Company at Weir City, spent a day or two in Pittsburg recently.

There are good opportunities for parties having means to engage in coal stripping in the Kansas field. Strip coal land can be bought or leased at reasonable prices and there is good money in the business. Further information will be furnished by addressing W. S. Russell, Stilwell Hotel, Pittsburg, Kansas.

The Bucyrus Company have a stock of repairs for their coal stripping steam shovels at the W. L. Sullivan Machinery Company store room, which is a great convenience to operators of Bucyrus steam shovels.

The W. L. Sullivan Machinery Company are located on 7th street near Broadway, where they carry a stock of coal miners, mill, railroad and contractors supplies. They are dealers in machinery, engines, boilers, pumps, motors, etc. for either steam, gasoline or electric, also have repairs for Bucyrus steam shovels. Mr. Sullivan will give his personal attention to the wants of his customers.

The Hughes Stone Company, 208 East Third street, Tulsa, Okla. have for sale a model-36 Marion revolving steam shovel, one-yard dipper all in first-class condition and working order, having been used only 8 months in their quarry, price and terms reasonable.

Louisiana

New Orleans and Vicinity

By "The Byrons"

Reports from the Sunlight Mining Co. at Jasper Ala. are that their coal operation is moving along very nicely. They are shipping over 500 tons of coal a day. They advise that their 225-B Bucyrus coal stripping shovel is doing nicely, also their 35-B Bucyrus coal loading shovel.

Mr. J. W. McKnight is operating a Class 20 Bucyrus dragline for the D. B. Gore Co. on their 17th St. Canal work in New Orleans.

Mr. F. T. Constant of Alexandria, La. has been awarded quite a large contract for railroad construction in the western part of the State. Mr. Constant advises that he has some teams on this work and expects to install some steam shovels on same at an early date.

Newell Bros. of Birmingham have been awarded quite a large road contract in Tennessee. They will install a 14-B Bucyrus shovel on caterpillars on this work. They are one of the largest road contractors in the South.

Reports from the Atchafalaya River are that the Hercules Co. are turning in large estimates with their two Bucyrus Class 24 draglines. Mr. O. O. Ogden is in charge of the work.

D. B. Hearin & Son have completed their Whitney Levee work and have moved their Class 24 Bucyrus dragline onto Scott levee above Baton Rouge. They have about 200,000 yards in this contract.

The Grasser Contracting Co. report good progress with their work below the city near Buras. Mr. L. Davis is in charge of this work.

The Hercules Co. were awarded the La Place levee contract the other day. The contract consists of about 150,000 yards. They will move a machine on this work in about two weeks.

D. B. Hearin & Son expect to be moving dirt in a short while with their new Bucyrus Class 24 Dragline which they will put on their contract on the Atchafalaya River.

Your correspondendent had the pleasure of meeting Mr. H. B. Blanks and Mr. C. G. Oglesby the cable-way contractors, in Memphis the other day. Both were wearing smiles and reported well pleased with their work upon which they are using Bucyrus cable-ways. Mr. Blanks is using a 6 yard machine on his work at Leota, Miss., north of Vicksburg, and Mr. Oglesby is using a 10 yard machine on his work across from Hickman, Ky. Team contractors along the river advised the writer that these cable-way contractors were certainly moving the dirt, and building levees.

D. B. Hearin & Son were awarded on Sept. 20th about 80,000 yards of levee work across from Lutches. This is known as Jack Strawn levee. They have a machine finishing up a contract which adjoins this work.

Major McDonough at Memphis awarded on Sept. 5th the following work:—Roach & Stansell 350,000 yards. Rodgers Bros. 400,000 yards and R. L. Leonard 750,000 yards. This is all team work.

Major Slattery rejected all bids except two on the work he advertised for on Sept. 15th. Roach & Stansell was awarded about 350,000 yards and R. T. Clark was awarded about 150,000 yards.

Anyone interested in a second hand Bucyrus Class 14 dragline on skids and rollers will do well by writing the "Byrons" at 1105 Hennen Building, New Orleans, La.

Major Slattery's two new Bucyrus Class 180 draglines have arrived on the work at Ashbrook Neck in Missippi and your correspondent had the pleasure of visiting them, the other day and they were certainly doing great work. These machines carry 5 yard buckets and 125 foot booms.

New Orleans will be a busy place on Sept. 28th as the government office will let about 2,500,000 yards of work on that date. This is all dragline work so some keen competition is expected. Prices have certainly improved along the river and it is hoped they will stay.

The Lower Coast Construction Co. were awarded about 200,000 yards of work on Sept. 20th. They will do this work with machines.

Buchanan & Co. of Shreveport report that they expect to have their new Bucyrus Class 24 dragline at work on their contract near Shreveport in a very short while. They are now operating a Class 24 machine on this work. Mr. W. M. Buchanan is in charge, so large estimates are being turned in.

Mr. J. L. Crow has gone to work for E. J. Hahn at Little Rock. He will operate a Class 9½ Bucyrus dragline on caterpillars on this work.

It is reported that J. P. Nelson of San Antonio, Texas has been awarded a large railroad contract in his State.

Reports from the double track work on the Southern R. R. in Georgia are that they are experiencing very good weather and turning in large estimates.

Mr. C. S. Miller, manager Memphis office of the Western Wheeled Scraper Co. reports a good business along the Mississippi River and prospects of much more. He is of course weeping about deliveries on dump cars. One thing sure, he is not weeping alone.

Clark, Cheshire & Co. were awarded quite a large contract at Clarksdale, Miss. This is all team work.

Dragline operators who are out of work will do well by addressing the "Byrons" at 1105 Hennen Building, New Orleans, La.

The coal business in Alabama is improving rapidly as this season points to a banner year. Many of the "under-mine" company's are becoming very much interested in the progress made by other companies using the Bucyrus method of stripping coal with large steam shovels. This new method is making competition very keen.

Anyone interested in purchasing coal stripping land will do well by writing E. L. Byron or if anyone has coal land for sale which can be stripped will also do well by writing Mr. E. L. Byron at either the Morris Hotel, Birmingham, Ala. or 1105 Hennen Building, New Orleans, La.

Massachusetts

Ed. Norris is running a model-28 revolving shoyel for the Harding Construction Company, Pittsfield, Mass. "Hello Ted Smith. Glad to hear from you."

Minnesota

News from the Twin Cities

By Clapp-Norstrom & Riley

1308 Pioneer Bldg., St. Paul, Minn.

C. C. Smith of Minneapolis received another contract from Grant Smith & Co., at Sioux City, Iowa, including about 25,000 yards of material for additional yards and side tracks. Mr.

Smith is working one steam shovel plant and expects to complete by the 15th of this month when he will be in the market for more work.

Ed. Peterson, the well known contractor of Omaha, arrived here State Fair Week with his pacer, Ben Earl and the trotter R. C. H. Ben Earl on Tuesday, September 5th, won the $3,000.00 purse, winning all three heats without any trouble. On Friday, R. C. H. lowered the track record in the trotting class when he came home in the first heat in 2.07¼, clipping a full second off the former mark. Nevertheless the purse of $3,000.00 was split between Miss Densmore and R. C. H., or $772.52, which ought to keep our friend Ed. in gasoline money for the next season. In addition to the above winnings we understand he trimmed a few friends and strangers alike.

Construction news of the last thirty days has been very scarce, presumably on account of the threatened strike. Labor is more scarce at this time of the year than we have seen in the Twin Cities for the last nine years and wages are running all the way from $2.50 to $3.00 a day with very few takers.

The Minnesota State Fair which closed last Saturday, brought hundreds of thousands of visitors to the Twin Cities but we failed to see very many contractors from out of town.

Barney Wickham whom we had the pleasure of meeting in Great Falls, Montana, a few weeks ago, is very busy subletting the Paulson-Dixon Line. There seems to be some temporary trouble about right-of-way which should be overcome by this time. Tom Higgins of Higgins & McDonnell, has subbed some five miles of rather heavy work and Tom is busy now moving his outfit on the work.

Roberts Bros. of Chicago are now commencing laying track on the Wildrose Line of the Great Northern. This work was let to Morris, Shepard & Dougherty of St. Paul, who covered the work in a very short order and are far enough ahead with the grading to permit the track laying to go ahead at full speed.

Forty-five dollars a month and board is now being offered in Duluth and other northern cities for woodsmen for the winter cut. This is $10 a month more than was ever offered before; yet virtually no men can be hired, according to employment agencies, state and private, at Duluth. Wages in all lines are going up rapidly and employment as well as employers are feeling the labor stringency, they state.

One prominent employment agent said:

"We want all the men we can get. Orders are piling up and we can't get men. One logging company hired a solicitor to canvass the streets for men—and secured only two laborers in a whole day. It looks as if few men return from the harvest fields. Owing to the big wages paid in the Eastern cities this year it looks as if few men would want to go to the woods and put up with the hardships of camp life in winter. The "fifty dollar lumberjack" is a possibility.

A survey of the Red Lake Northern Railway across the Red Lake Indian reservation has been completed and the plats have been filed with the Department of the Interior, it was learned. Two lines from near the edge of the reservation have been proposed, one going south, crossing the Soo Line at Pinewood and the Great Northern at Fletcher Junction, between Solway and Shevlin, south along the grade of the old Red River Lumber Company's logging road to the state park, through which a new grade will be required, joining another logging road grade east of the park and running from that point to Akeley.

The other proposed arm of the road would branch near the reservation line and run east to Island Lake, where it would join the Red Lake line, and the trains would be brought to Bemidji over that road.

St. Paul and Minneapolis men figured prominently in the negotiations which resulted in contracts made by the city of Bismarck, N. D., for the largest single paving project in the history of municipal improvements in America.

Harry G. Davis, 2165 Selby avenue, northwest representative of the Barber Asphalt Company, returned from Bismarck after closing contract, which provides for the paving of nearly sixteen miles of streets in the Dakota capital.

The contract for constructing the pavement was divided between Harris & Oakes of Minneapolis and the Ford Paving Company of Cedar Rapids, Iowa.

The project involves 446,440 and 893,024 square yards of pavement.

The advance guard of track walkers, section men and high officials of the road arrived in St. Paul September 14th to attend the annual meeting of the Veterans' Association of the Great Northern Railroad held at the Railroad and Bank building.

At the business session the announcement of the new pension plan for which $1,000,000 has been set aside was made.

Prominent veterans and well known speakers took part on the program at the banquet held on the evening of September 15th at the Great Northern Employes' cafeteria. The list of speakers included President Louis W. Hill, Archbishop John Ireland, J. G. Pyle, Pierce Butler, Lawrence Hodgson, Rev. Harry Noble Wilson and President S. F. Kerfoot of Hamlin University.

Veterans who spoke were Dr. J. A. Quinn, Harry Kemp, William W. McGraw, A. Whittaker and W. J. McMillan, president of the Veterans' Association. Francis J. Rosenthal had charge of the musical program.

The veterans visited the grave of James J. Hill at 10 A. M. Sunday. The trip to North Oaks farm was made in automobiles furnished by the company.

Missouri

Kansas City and Vicinity

By M. T. Babb

M. O'Rourke has taken 8 miles of shouldering work on the Katy under the L. J. Smith Construction Co. The yardage is about 23,000 total.

A letter received from Paul Crawford, a former resident of this city states he is getting along nicely on government work in Alaska. Mr. Crawford expects to return to this city within the next year.

J. L. Kellar has his outfit at work on the Katy in Oklahoma.

B. Haney, a well known shovel runner is now idle. Anyone needing a first class shovel engineer can address Mr. Haney, care of Western Wheeled Scraper Co., Kansas City, Mo. and the letter will reach him.

The Blodgett Construction Co. of this city has just taken a nice contract in southern Arkansas from the Dierks Lumber Co. Standard gauge equipment will be used. P. H. Smith will be the manager in charge. The yardage in this contract is not large (50,000 yards) but the material is of the best.

Small team outfits are still in demand. Owners of 5 and 6 team outfits, who may be idle at this time should write the Western Wheeled Scraper Co., Kansas City, Mo. for work.

H. H. Hannenkratt is progressing nicely on his city contract. The end is now in sight. As to profits—well we can only guess and our guess is that Mr. Hannenkratt will not worry much this winter over his coal bills.

The Kansas City Railways Co., of this city are calling for bids for several miles of track extension in this city. This will be let the last of September. The exact date is unknown at this writing.

A. Moore of Newton, Kansas, is home from his Colorado trip. He has been in the west this summer on account of his health. We regret to announce Mr. Moore is still on the sick list.

C. W. Merydith & Son are hard at work on their contracts

in the Kansas oil fields. Each day the reports from these new found fields are brighter and they bid fair to rival the famous Cushing field soon. One has to see the conditions to actually realize what "oil" really is. Paupers of one day are rich men the next. Land that a year ago could be bought for a few dollars now is boosted to the millions. One lease alone sold for $3,000,000 last week. This netted a profit of $2,500,000 after two months of successful drilling.

Missouri

St. Louis Items

By A. B. Koenig

V. E. Steen has been laid up in Kansas City all summer, but is up and around again. Is looking for a small piece of rock work. Address him care of Koenig's Labor Agency, 503 Delaware St., Kansas City, Mo.

Judge G. A. Crow denied a bill for an injunction in the Circuit Court in Belleville, to the East Side Levee and Sanitary District, in which the latter sought to restrain the Kinser Construction Company, the Illinois Dredging Company and the East St. Louis Connecting Railway Company from using material pumped from the Mississippi bed as a filler for the levee in course of construction on the east side. The case has been in court for two years. The contract called for "clean, unfrozen earth" as a filler, and the Levee Board contended that the contracting concerns doing the job were not delivering that kind of material. Some $300,000 worth of work was involved in the suit. The court held that the material delivered comes with the specifications.

The L. J. Smith Construction Co. have sublet all of their bank widening work on the Missouri, Kansas & Texas Railroad in Oklahoma.

L. J. Smith has been cleaning up at all the big stock shows in the west lately with his white face cattle.

R. P. McNamara, Litchfield, Minn. has a twelve team machine outfit idle that he would like to place in the south, somewhere where he can have a winter's job.

McArthur Bros. Co., Vincennes, Ind. have 100,000 yards of good levee work to let at that point. They will let this work in quantities to suit outfits. Prices will be arranged after parties look over the work.

Roger Faubion of the J. W. McMurray Contracting Co. passed through St. Louis the other day, on his way to Cape Girardeau to renew work on their concrete job for the Frisco Railroad Co. The high water last year caused them to shut down.

J. J. Purcell writes us from Annada, Mo. that he has a dragline and a western grader idle at that point.

The Board of Public Service on September 12th granted permits to the Terminal Railroad Association to lay tracks across seven streets in the north end of the city and east of Broadway, in a district bounded by Prescott, Bulwer, Luther and Taylor avenues. The tracks will be laid on a tract recently purchased for a storage yard to be used in connection with the Terminal's west belt line. The street over which the tracks will be paved for a block are Pitzman, Newman, Sweringer, Campbell, Morin, Taylor avenue, and a half block on Gypsy street. No protest has been made against the issuance of the permits.

The J. W. McMurray Contracting Co. of Kansas City, were awarded the contract for building two new bridges for the M. K. & T. Railroad near Shawnee and Oklahoma City, Okla. They also were awarded the contract for building the temporary approach for the 23rd street viaduct, Kansas City, Mo.

Mark Ragsdale of A. V. Fetter Co., spent a couple of days in town on business. Reports their revetment and shore protection job on the Mississippi River as nearing completion. The while he was here he invited Koenig and a party of his friends to spend a few days with him fishing. The invitation has been accepted and the party of fishermen will leave here on Tuesday to spend the balance of the week at Fruitland, Ill. as guests of Mr. Ragsdale.

Prosecuting Attorney Richard F. Ralph of St. Louis County, instructed the court to issue $520,000 road bonds under the recently adopted $3,000,000 bonds issue. Of this amount $10,000 worth is in denominations of $100, the balance $1,000. Ralph has conferred with Assistant Attorney General W. T. Rutherford, and it was agreed the attorney general's office will advise the state auditor to accept the issue. Ralph said that he desires to prove that bonds of $100 denomination are not as readily salable as those of the larger denominations. The court also instructed Collector Albert Wilmas to add 9 cents per $100 valuation on the 1916 tax bills due for payment in September. The court will shortly advertise for bids on work to be done with the recently issued bonds.

Cook & Waddell have started on a new piece of bank widening work on the Rock Island Railroad near Tindall, Mo.

Pete McEnroe, Hotel Georgian Henryetta, Okla., will have his 30 team outfit idle at that point in a few days. Is in the market for some more grading.

"Pretty good luck" Dave Griffith is in Kansas City at the present time. Expects to go back on his ranch in the west in a couple of weeks.

A. B. Koenig and his family spent the past two weeks in the west. Returned to St. Louis last Monday feeling better than ever.

J. D. Vogt of Belleville, Ill. was awarded the contract for county road work near there last week.

The Iron Mountain Railroad Co. are going to erect a new depot at Bismark, Mo. Are also contemplating erecting a round house and coal chute there.

A. C. Esser the hustling representative of the Western Wheeled Scraper Co. here, left for Memphis the other day. Esser reports doing the biggest business in his line this year that he has ever done since he has been connected with the Western Wheeled Scraper Co.

P. J. Murphy of Moberly, Mo., secured a bridge filling job from the Wabash Railroad Co., near Conception, Mo.

Webb-Kunze Construction Co. are excavating for the foundations of the new Bevo Plant that is going to be erected here by the Anheuser-Busch Brewing Co.

A. Burk has seven teams idle at Ridge Farm, Ill.

The Heman Construction Co., Title Guaranty Bldg., St. Louis, have 130,000 yards of work in southern Illinois to sublet. Grant Wyatt of this company will be pleased to show contractors over the work.

Thos. J. Dolan of Chicago, spent a week here visiting contractors. Dolan reports doing an elegant business here during his stay.

New York

New York and Vicinity

By H. Grey

Our old friend Charles Rees, while doing a lot of hustling for the Bucyrus Company and General Equipment Company, does not seem to be losing any weight. The other night, while going up in the subway, he got up, and three average sized men took his seat.

Byron Yates, one of the oldest and best steam shovel engineers in this section, is making records with a Vulcan shovel for the Richard Carvel Contracting Company, on Southern Boulevard, New York City, subway construction.

Mason & Hanger are just starting work on about a three million subway contract in Brooklyn.

The General Equipment Company, agents for Bucyrus Company, now have a force of nine men working out of the New York office, having recently taken on three new men on account of the great increase in business.

North Carolina

Elic E. Trent is at present working on Bucyrus 70-C shovel No. 1694 for the Whitney Power Plant, at Palmerville.

Ohio

Columbus and Vicinity

By Sykes & Coffin

Columbus and the vicinity of Franklin county is still quivering over the matter of protection against flood.

They have every indication of eliminating the recommendations of Alverod & Burdick, the engineers who made an analysis of conditions.

In order to save a certain amount of money and still risk a flood, the county will very probably adopt some other plan. This will very likely involve the expenditure of about $5,000,000. This plan eased itself to favor when it was promised that it would only use $3,500,000. Even city engineer Matzel, of Columbus, frowns upon it. The council, however, in the face of the statement of engineer Matzel is accepting the verdict of various individuals on the matter.

A bond issue of $5,000,000 would be expended on some plan or other will be voted upon in November.

City engineer Matzel, has been unable to take a very active part in this matter but states that a proposed cut off through May avenue, Columbus would cost $1,200,000. It was impossible to secure the passage of this work which would have been inadequate also. In the meantime, the Miami Valley Conservancy Board is rapidly progressing to the point where contracts should be let.

George W. Williams recently installed a 160-ton crane for the New York Central Lines at Toledo.

Oregon

Portland and Vicinity

By L. T. Russell

Burnett Construction Company, of Seattle, have been making good progress on their Rainier avenue work and expect to be through before the rainy season starts. This has been rather a difficult job and the material to be excavated has been found harder than originally expected. Mr. Andrew Peterson, deserves credit for making the showing he has under the conditions which governed the work.

We have been advised that Walter Burrell, of 250½ Third street, Portland, Oregon, has his five foot placer dredge working in good shape on Canyon Creek near John Day, Oregon.

The Alaskan Engineering Commission have recently ordered through their Seattle purchasing agent, C. E. Dole, a class-9½ Bucyrus dragline which will be added to the equipment on the Fairbanks end of the railroad, under the general direction of Thomas Riggs, commissioner.

The Portland office acknowledges with pleasure receipt of a copy of the proceedings of the Northwest Society of Engineers, for the months of May and June 1916, describing in an excellent manner and in considerable detail the work of flood preventions, on the Puyallup and Stuck rivers, by W. J. Roberts, chief engineer for the Inter-County Commission. The article in question is very interesting and we appreciate being remembered with the copy sent us.

C. P. McDowell, steam shovel engineer, is at work near Marshfield, Oregon, running a Thew shovel for Perham Bros.

Earl Grider, is running a Thew shovel in basement work in this city for C. J. Cook, they are now digging a big basement at 6th and Stark streets.

Martin Smith is running the 18-B Bucyrus shovel for Porter Brothers on their highway work near Castle Rock, Wash.

Renewed interest is being taken in the Strahorn system of railroads in southern Oregon, and we have recently read in local newspapers rumors to the effect that the Southern Pacific Company might also come into this field, though to date, this fact has not been established. It is assured, however, that construction work will begin either this winter or the coming spring on some of the roads as now surveyed.

Pennsylvania

Pittsburgh and Vicinity

By F. A. Rumbarger

The General Electric Company, Erie, Pa., are excavating for plant improvement about 2,000,000 cubic yards of earth with a Marion model 60 and they are using Western 12-yard dump cars.

Johnstown & Somerset Street Railway are using a 14-B Bucyrus shovel for excavating their line from Johnstown, Pa., to Somerset, Pa.

The Somerset Contracting Company who had State Road contract near Monaca, Pa., has laid up their equipment and sold the majority of same on account of the engineers relocating road and it is expected that it will be readvertised and it should make an attractive proposition on account of there being considerable excavating on the new location.

We understand that C. P. Mayer of Bridgeville, Pa., who by the way is not only Mayer in name, but Mayer in reality of the prosperous little suburb of Pittsburgh, is contemplating the installation of modern coal stripping plant on one of his properties near Bridgeville, Pa.

The Corrigan McKinney Company of Cleveland, Ohio are extensively enlarging their plant and in fact their work is well under way. This work was started only a few months ago, but according to the present outlook, they will again have to enlarge their plant. It is reported that plans are now under consideration for further improvements.

Rube Broderick who has been operating the Duquesne Contracting Company's Bucyrus class-14 dragline on their Brunot Island job at Pittsburgh has been transferred to their job near Youngstown to operate their class-14 there.

Anderson Brothers Contracting Company of Altoona, Pa., are surely making things hum on their job for the Western Maryland Railroad near Connellsville, Pa.

The Cambria Steel Company of Johnstown, Pa. are using a Bucyrus 70 in straightening out part of the Cambria River which runs near their plant.

John P. Dugan is superintendent for John F. Casey Company, building thirty-two additional tracks in Pittsburgh for the Pennsylvania Railroad.

Philadelphia and Vicinity

By E. G. Lewis

Mr. A. E. Dick of Hazleton has taken over the J. H. Dugan stripping business, and has acquired in the transaction, three additional shovel plants which added to Mr. Dick's already large equipment, makes him the largest individual stripping contractor in the anthracite regions. Mr. Dick's operations now include three stripping contracts for the Lehigh & Wilkes-Barre Coal Company, two for the Philadelphia & Reading Coal & Iron Company, one for the Susquehanna Coal Company, and one or two operations for independent companies.

Timothy Burke of Scranton has been awarded the stripping contract for uncovering the Mammouth vein at Baltimore Colliery No. 5, Wilkes-Barre, Pa., for the Delaware & Hudson Coal Company. This contract constitutes the handling of about half a million yards of material. Mr. Burke has also acquired the contract for stripping for the D. & W. Coal Company near Scranton.

Porter Bros. are third tracking the Delaware & Hudson Railroad from Delanson, N. Y. to Schorarie Junction, N. Y., a distance of 8 miles; two shovels and an Ohio clam dredge. The shovel Marion model-76 operated by Andy Langan and craned by Steve Langan, the fireman's name is unknown. The other shovel is a Thew Model-0 operated by Pete Beck of Superior, Wisconsin. The foreman is Pat Madden. Porter also has two shovels working at Carbondale, Pa. diverting the river and making new yards for the D. & H. Railroad Company. The Ohio clam dredge is operated by Edward George and son, making a new channel course for spring freshets at Esperance, N. Y.

Timothy Burke has five shovels working on coal stripping, one 70 Bucyrus at Wilkes-Barre, operated by Tom Lynch, cranesman, H. S. Aston; fireman, F. Aston; foreman, John Langan. Tom Lynch's address is 188 Scott St., Wilkes-Barre. One 70-ton Bucyrus at Kingston, Pa. operated by Ham Sargen and craned by Johnnie McCabe; foreman Mike Harrington. One 70-ton Bucyrus at Minooka, Pa. operated by Jerry Coughlin and craned by Joe Gilligan, one 70-ton Bucyrus at Minooka, operated by Fred Cole and craned by Fred Smith, one 18-B Bucyrus operated by Earl Harrington. The work is under superintendent Tom Harrington. Ed. Whalen has some grading on the D. & H. at Worcester, N. Y. One shovel model-20 Marion operated by Al. Swingle, craned by H. Joyce.

Chas. Flynn is erecting a class-7 gasoline caterpillar dragline for the Bethlehem Steel Company.

Texas

M. C. Coffelt is at present with the Texas & Pacific Railway Co., at Dallas, Texas. He is operating a combination locomotive crane and pile driver with a 2-yard clam shell bucket. Mr. Coffelt states that they are loading gravel and cinders, getting out 25 and 30 Rogers ballast cars and big Rock Island coal cars.

West Virginia

H. M. Waugh's standard gauge "outfit" is building coal and passing tracks on Tug-Fork Branch, Gary, W. V., for the Norfolk & Western Railway Company.

Wisconsin

Phillip Rouse is erecting a 14-B revolving shovel for Peter E. Johnson, at Blair.

PROSPECTIVE · CONSTRUCTION

Arkansas

State highway engineer Carter, Little Rock, has prepared plans and specifications for 14 miles of concrete road between Blytheville and Gusnell.

It has been decided by the state highway commission at Little Rock, to construct 22 miles of macadam road from Walnut Bridge to Rhea Bridge.

Bids for constructing 14 miles of ditch will be received in November by Christian & Ayres, engineers, Texarkana. Estimated cost about $45,000.

California

It is being planned by the Western Pacific Railway Company to construct a branch line about 90 miles long. T. J. Wyche, San Francisco, is chief engineer.

Florida

The city of Arcadia voted a bond issue of $145,000 for street paving, sewers and water system.

The city of Daytona will soon vote on a bond issue of $160,000 for paving and sewers.

Georgia

Savannah Western Railroad plans to extend the line from Florence to Estill, S. C., about 150 miles. A. M. Rea, secretary, Savannah.

Idaho

It is being considered to improve the highways between Lewiston Boise, at an approximate cost of $500,000. E. M. Booth, Boise, is state highway engineer.

Iowa

The Chicago, Milwaukee & St. Paul Railway has purchased land at Sioux City and is contemplating the expenditure of approximately $1,000,000 for the erection of shops and round houses.

The Atchinson, Topeka & Santa Fe Railroad will spend about $250,000 for improvements at Madison.

Kansas

It is reported that Plainville-Norton & North Platte Railway Company with headquarters at Plainville, has been organized and will construct a line from North Platte, Nebraska to Hays, Kansas.

Maryland

Surveys are now being made for an electric railway from Potomac River near Williamsport, to Millville and Harpers Ferry, West Virginia. Martin & Seibert, attorneys, Martinsburg, W. Virginia.

Missouri

At the November election, Osage County will vote on a bond issue of $300,000 for good roads.

Mississippi

Greenville, Miss., September 14, 1916. The Black Bayou Drainage District, embracing about 100,000 acres in Washington County, has been organized. The following commissioners were appointed: L. C. Hays, Hollandale, Mississippi, President; Wm. Atterbury, Estill, Mississippi, and Allen Hunt, Greenville, Mississippi.

The Morgan Engineering Company of Memphis, Tennessee, have been appointed as engineers for the district and will start surveys at once. They expect to have the plans completed by the first of the year.

County supervisors, Coffeeville, recently voted for a $100,000 bond issue for improving roads.

North Dakato

A sewer system ranging from 18 to 72 inches in diameter and to cost from $250,000 to $300,000 is proposed by F. L. Anders, city engineer of Fargo.

Ohio

The Pennsylvania lines west, is planning to extend its line from Toledo to Detroit, Michigan. It is reported that approximately $40,000,000 will be used to build this line and a belt road for freight purposes.

Paving Wooster road with brick on concrete foundation is being planned. It is estimated that it will require 23,500 square yards of paving and cost about $58,000. W. G. High, Akron, is county clerk.

Oklahoma

The city of Sand Springs will shortly ask for bids for street paving, estimated cost $110,000.

Pennsylvania

The Pennsylvania Railroad will shortly award the contract for extending the Panhandle Division on West Cumberland branch east to Chester. A. C. Shand, Philadelphia, chief engineer.

The Johnstown Traction Company plan to extend their line to Seward, a distance of about 7 miles.

Texas

J. P. Nelson, San Antonio, has been awarded contract for building the Lubbock & Great Northern Railroad from Lubbock, Texas, to Hollis, Oklahoma, about 150 miles. It is reported that the contract price is approximately $3,500,000.

State Reclamation engineer, A. H. Stiles, has approved plans for the extension of the Angleton branch district, estimated cost about $80,000.

Washington

The Oregon-Washington Railroad & Navigation Company contemplate constructing a 10-mile extension from Murray branch to Ray-Jefferson line. G. W. Boschke, Portland, Oregon, chief engineer.

West Virginia

Surveys are being made for an extension to the Monongahela Railway from Fairmont to Hartsburg and Belington, about 50 miles.

It is reported from Fayetteville that the county has issued $600,000 of road bonds. J. K. McGraph, Mt. Hope is engineer.

TRADE NOTES

The Harold L. Bond Company, 383 Atlantic Ave., Boston, Mass., furnished eight Atlantic diaphragm pumps on the Coney Island Terminal job where the work is very difficult because they strike tidewater four feet below the surface and salt water keeps coming into the foundation pits through the sandy bottom with the pressure of the Atlantic Ocean behind it.

They are stretched out over a mile of construction. Some are working on the foundations for Stillwell Ave. Station. Others are keeping the pits dry until concrete footings are complete for the big Ocean Ave. Station, which spans the avenue upon reinforced concrete arches.

"The four-inch Atlantics are handling as high as 8000 gallons per hour," says superintendent G. W. Steinbach, of the Lord Construction Co. "They keep the pits dry until we can get them sealed with concrete and the footing complete around the pile-heads. They need little attention. One man looks after three or four."

The following is a list of White Trucks sold to contractors during the past month.

One 1½-ton White truck to John Sternecker, hauling contractor, New York City—making a total of 6 White trucks now operated by this contractor.

Two 3-ton dump trucks to A. & O. Holderman, contractors, Wheeling, West Va.

Two 5-ton dump trucks at R. C. Storrie & Company, Contractors, San Francisco, Cal.—making a total of 4 White trucks now operated by this company.

One 5-ton dump trucks to H. E. Casey, contractor, San Mateo, Cal.—making a total of 3 White trucks operated by this contractor.

One 5-ton dump truck to Moutrey & Bilger, Contractors, Oakland, Cal.—making a total of 3 White trucks operated by these contractors.

Four Good Roads trucks to the Hawkeye Construction Company, contractors, Spencer, Iowa.

One 5-ton dump truck to the Pike's Peak Auto Highway Company, Colorado Springs, Colo.—making a total of 15 White trucks operated by this company.

One 5-ton dump truck to the Sheridan-Kirk Contracting Company, Portsmouth, Ohio—making a total of 4 White trucks operated by this company.

One 5-ton dump truck to the Cleveland Macadam Company Cleveland, Ohio—making a total of 5 White trucks operated by this company.

One Good Roads truck to Edgar & Company, zinc mining, Glenwood, Ark.—making a total of 3 White trucks operated by this company.

One 5-ton truck to Thomas, Bennett & Hunter, contractors, Westminster, Md.—making a total of 2 White trucks operated by this company.

The Hayden-Corbett Chain Company, Columbus, Ohio, report that they are continuing to receive a large volume of business, covering chain of all kinds, and especially orders for steam shovel hoisting chains for use on all makes of steam shovels. They are still urging their customers to place their orders as far in advance of their actual wants as they possibly can, with a view of avoiding disappointments as regards deliveries.

UMI

Suggestions for Road Jobs

Road and paving contractors have had to develop efficiency and practise economy to an unusual extent this year. During the lean years past, close figuring has become such a habit that many contracts are still being taken at a price that is bound to result in a loss unless the contractor watches every player in the game. Materials cost more than last year, rail deliveries are likely to be uncertain, causing delays and consequent expense, and labor is both high and inefficient. You can't "drive" your men this year because work is too plentiful and jobs easy to get. The contractor's best policy is careful organization of his force and rigid economies all around. All this is assuming that the contractor is honest and will not try to evade the plans and specifications.

In order to assist contractor's in effecting necessary economies in matters of construction and orgainization, the highway department of the Atlas Portland Cement Co. employs a force of engineers for this purpose.

These men are constantly in touch with highway construction all over the country. They are able to see and study methods employed by successful contractors everywhere. The results of these observations is at the disposal of anyone who cares to ask for them. It might well pay contractors to make use ofthis service.

Cost of a Large Blast in Colorado

(Continued from Page 11.)

The quarry face was from 39 feet to 49 feet high. The stone consisted of homogeneous layers of limestone varying in thickness from 6 to 28 inches and separated by thin layers of shale also varying from nothing up to 6 or 8 inches thick. The stratification was flat and the quarry floor practically level.

Holes were drilled with a 5⅝-inch diameter bit. Each hole was drilled two feet below the quarry floor level.

The blast consisted of 44 holes, arranged in four rows. Holes were spaced 20 feet apart and the first row consisting of 15 holes was set 20 feet back from the face, with 18 feet between the rear rows. From 265 to 425 pounds of Monobel No. 6 were loaded per hole. Each hole was primed with two No. 7 Du Pont Electric Blasting Caps. One set of detonators was connected in series and the other set in parallel and all fired by means of a 220-volt D. C. Power current. Sand was used for tamping.

Give Your Men Clean, Comfortable Beds to sleep in and they will do better work.

"TIGER" STEEL BUNKS are of durable and sanitary construction. Frames are steel, coated with rust-proof enamel. The wire link fabric springs are attached to the frame with oil tempered helical springs which assure elasticity and are guaranteed against sagging. Easily knocked down for shipping. Require very little space. Made in single or double decks in a wide range of sizes.

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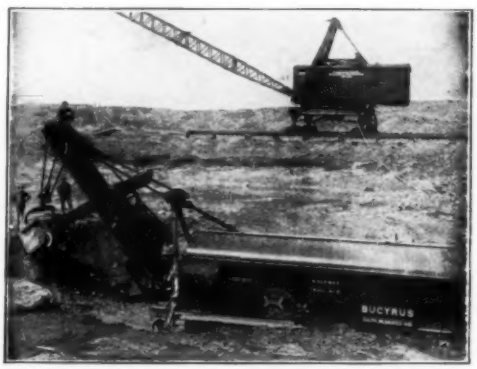

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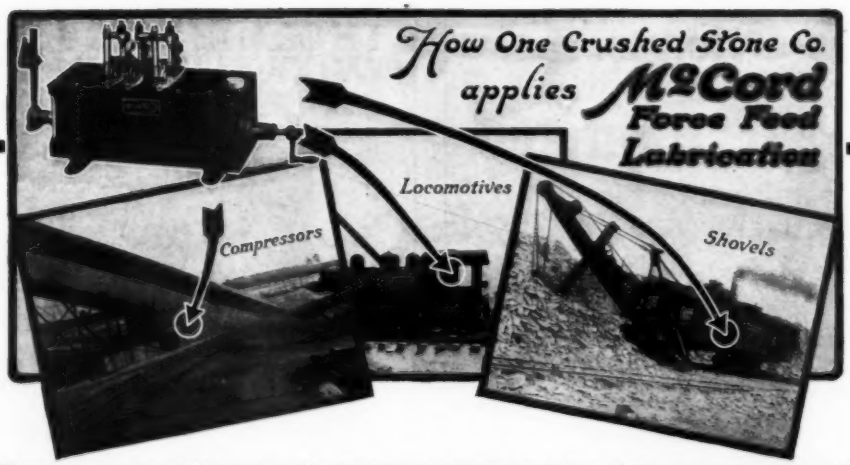

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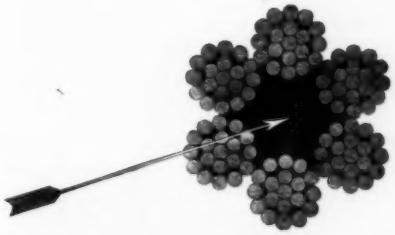

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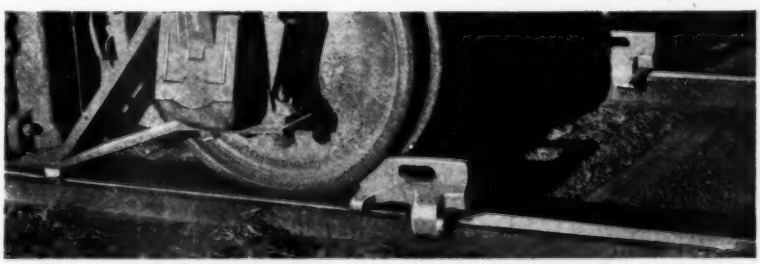

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No Buffer Timber Required

Wedge Above Rail Not Below
All in One Piece

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BUCYRUS COMPANY
SPECIALTY DEPARTMENT
P. O. Box S SO. MILWAUKEE, WISCONSIN

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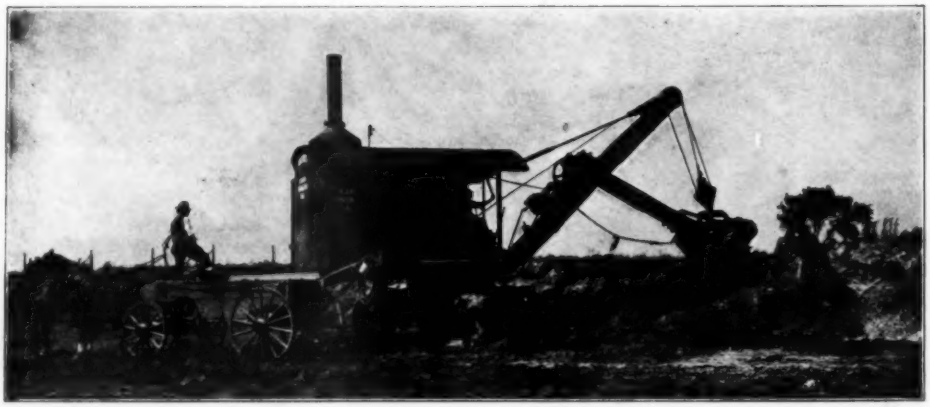

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The Excavating Engineer

Volume 13 NOVEMBER, 1916 Number 2

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Atlantic Type Steam Shovel

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